- Complete line
- Field proven IC
- Interface problems solved
- Unique Fairchild package
- Excellent software support

IC LOGIC CARDS

Data Technology Corporation

INTRODUCTION

To provide you with the greatest possible product reliability, we have added 18 new Integrated Circuit Logic Cards to our line. These cards supplement and/or replace many of the logic cards used in our previous line. The I.C. cards are directly compatible, both electrically and mechanically with our discrete component line. They employ Fairchild DTμL elements, therein providing the ultimate in reliability. Data Technology Corporation is the only company offering a complete line of analog, digital, hybrid, and electro-mechanical interface plug-in cards exclusively using silicon planar semiconductors. The resultant reliability, simplicity and completeness of this line enables you to obtain your desired system performance with the highest degree of confidence.

The Integrated Circuits are mounted on a printed circuit board (5½" wide by 3¾" high) with the individual leads mounted to the board through plated holes. The board is a two-ounce, copper-clad, glass fabric epoxy resin per MIL-P-13944B type GE. A 34-pin, gold-plated, bifurcated connector provides the most reliable interconnect afforded by today's technology.

Data Technology's complete line of logic cards is backed with an extensive line of necessary mounting hardware, power supplies, and software.

Our representative nearest you would appreciate the opportunity to give further assistance. Ask him for a copy of our detailed catalog, application notes and other related technical literature.

LOGIC ELEMENTS

	PART NUMBER	PRICE

2-NAND/R-S FLIP FLOP
PART NUMBER 12819 — PRICE $54.00

The 2-Nand/R-S Flip Flop card has eight 2-Nand circuits and two R-S Flip Flop circuits. Three Fairchild 946, dual inline, fourteen-pin DTμL elements are used. The output of each circuit is provided with a test point; white for NAND, blue for FLIP FLOP.

2-NAND
PART NUMBER 12694 — PRICE $75.00

The 2-Nand card contains sixteen 2-Nand circuits. The output of each circuit is provided with a White test point. The Fairchild 946, dual inline, fourteen-pin, DTμL elements are used. Because of the pin requirements an auxiliary 18-pin connector is employed in addition to the standard Elco 32-pin stake connector.

4-NAND
PART NUMBER 12702 — PRICE $72.00

The 4-Nand card contains eight 4-Nand circuits. Six of the 4-Nands have the node provided, the other two circuits have diode expanders to provide input capability of six. Each output is provided with a White test point. The Fairchild 930, dual inline, fourteen-pin, DTμL elements are used. Because of the pin requirements an auxiliary 18-pin connector is employed in addition to the standard Elco 32-pin stake connector.

R-S FLIP FLOP
PART NUMBER 12815 — PRICE $64.00

The R-S Flip Flop card contains eight Flip Flops. Each Flip Flop employs two cross-coupled Nand circuits, with a D.C. set and reset input. The true (or Set) side of each Flip Flop circuit is provided with a Blue test point. The Fairchild 946, dual inline, fourteen-pin, DTμL elements are used.

EXCLUSIVE OR
PART NUMBER 12706 — PRICE $88.00

The Exclusive OR card contains eight circuits. Four of these circuits require only the two true inputs; the other four circuits require two true inputs plus their complements. Four White test points and four Grey test points are provided for the outputs, respectively. The Fairchild 946, dual inline, fourteen-pin, DTμL elements are used.

DIODE EXPANDER   12698 $36.00

The Diode Expander card contains nine circuits; four 2-input, and five 3-input Diode Gates. These Diode Gates can be used to expand input capability to 20 with no adverse effect on the element to which they are attached; however, interconnecting lengths must be kept at a minimum. Each output is provided with a Green test point. The circuits use IN914 silicon diodes.

AND DRIVER   12977-1 $62.00
                                                         12977-2 $62.00
The And Driver card contains four 4-Nand circuits and four 2-Nand circuits. The output of
each circuit is buffered with a discrete component and transistor stage. Selection of the   12977-3 $66.00
output transistor allows for driving logic, lamps, relays or high voltage displays. A separate
ground is provided for the output stages (power ground). The Fairchild 946 and 930, dual
inline, fourteen-pin, DTμL elements are used.

UNIVERSAL FLIP FLOP   12690 $72.00

The Universal Flip Flop card contains four Flip Flop circuits. Each circuit has two A.C. set and two A.C. reset (clear) inputs in addition to the trigger (or clock pulse) input. A D.C. set is provided on each stage, and a jumper provides the selection of a D.C. reset or a second A.C. reset. Provisions for external collector resistors permits extending the counting frequency to 10 megacycles. The Fairchild 945, dual inline, fourteen-pin, DTμL elements are used.

LOGIC FUNCTIONS

	PART NUMBER	PRICE

DUAL DECADE COUNTER   12823 $125.00

The Dual Decade Counter card contains two identical counters. Each counter employs four Flip Flops in a 1-2-4-8 configuration which recycles after the count of nine (0 to 9). A Nand circuit insures no lock up in the event an 8 and 4 are accidentally set together. A count and count inhibit is furnished for each counter. Each stage of the two counters has a D.C. set; a common reset is employed for each of the two counters. Color test points are provided for each output (brown, 1; red, 2; yellow, 4; and grey, 8). Fairchild 945 and 946, dual inline, fourteen-pin, DTμL elements are used.

DUAL BINARY COUNTER   12827 $125.00

The Dual Binary Counter card contains two ($\div$16) binary counters with ripple carry. D.C. set lines are provided for each stage of the two counters; one common, buffered, D.C. reset is provided for each counter. Provisions are made for external collector resistors to the first stage in each counter to extend the counting range to 10 Mc/S. Blue test points are provided on the output of each stage. Fairchild 945 and 946, dual inline, fourteen-pin, DTμL elements are used.

DUAL SHIFT REGISTER   12682 $125.00

The Dual Shift Register card contains two four-bit shift registers. The D.C. set lines for each stage are provided for parallel data entry; steer lines for the first stage in each register are also provided for serial data entry. A common shift line and a common reset line are provided for each register. Blue test points provide access to each stage of both registers. Fairchild 945 and 946, dual inline, fourteen-pin, DTμL elements are used.

DISPLAY DRIVER   12831-1 $120.00
                                                         12831-2 $120.00
The Display Driver card contains a decade counter, employing four Flip Flop circuits. The
1-2-4-8 outputs of this decade counter are decoded by ten discrete component Nand cir-   12831-3 $120.00
cuits with power transistor output stages. A common strobe is furnished for the output
decoding. Red test points are provided for each of the ten output stages. Fairchild 945
and 946, dual inline, fourteen-pin, DTμL elements are used.

All prices subject to change without notice.

● FIELD OFFICE

REPRESENTATIVES

1
George Gregory Associates*
7 Erie Drive
Natick, Massachusetts
Phone: (617) CEdar 5-9070

George Gregory Associates
9 South Main Street
Cheshire, Connecticut
Phone: (203) BRowning 2-5040

2
Ossmann Instruments, Inc.*
101 Pickard Drive
Syracuse, New York
Phone: (315) 454-2461

Ossmann Instruments, Inc.
3100 Monroe
Rochester, New York
Phone (716) 586-0380

Ossmann Instruments, Inc.
Vestal Parkway East
Vestal, New York
Phone: (607) 785-9947

4
Electronic Marketing Associates*
11411 Amherst Avenue
Wheaton, Maryland
Phone: (301) 946-0300

Electronic Marketing Associates
125 Aylesbury Road
Timonium, Maryland
Phone: (301) 825-0300

5
BCS Associates, Inc.*
P.O. Box 6578
Orlando, Florida
Phone: (305) 425-2764

BCS Associates, Inc.
1020 E. Wendover Avenue
Greensboro, No. Carolina
Phone: (919) 273-1918

BCS Associates, Inc.
2317 Bob Wallace Ave., S.W.
Huntsville, Alabama
Phone: (205) 534-1648

6
S. Sterling Company*
21250 10½ Mile Road
Southfield, Michigan
Phone: (313) 357-3700 or
(313) 442-5656

S. Sterling Company
G.B.U. Building
4232 Brownsville Road
Pittsburgh, Pennsylvania
Phone: (412) TU 4-5515

S. Sterling Company
5827 Mayfield Road
Cleveland 24, Ohio
Phone: (216) HI 2-8080

S. Sterling Company
3300 South Dixie Drive
Dayton, Ohio
Phone: (513) AX 8-7573

8
Impala, Inc.*
7540 Lowell Street
Overland Park, Kansas
Phone: (913) NI 8-6901

Impala, Inc.
P.O. Box 6163
Lambert Field
St. Louis, Missouri
Phone: (314) JA 2-1600

Impala, Inc.
1011 Clifton Street N.W.
Cedar Rapids, Iowa
Phone: (319) 362-2125

Impala, Inc.
247 South Pinecrest
Wichita, Kansas
Phone: (316) MU 2-3593

9
SOUTHWEST ELECTRONIC IND. INC.
183 Meadows Building
Dallas 6, Texas
Phone EMerson 3-1671

SOUTHWEST ELECTRONIC IND. INC.
Room C-102, 6001 Gulf Freeway
Houston 23, Texas

SOUTHWEST ELECTRONIC IND. INC.
6749 E. 12th Street
Tulsa 12, Oklahoma

10
Paul P. Robbins & Associates
1621 Orchard Drive
Denver, Colorado
Phone: (303) 429-2835

Paul P. Robbins & Associates
2201 10th Street
Alamogordo, New Mexico
Phone: (505) 437-1021

11
Harry Levinson Company
1211 E. Denny Way
Seattle 22, Washington
Phone: (206) EAst 3-5100

12
T. LOUIS SNITZER CO.
5354 West Pico Boulevard
Los Angeles, California
Phone WEbster 8-2073

T. LOUIS SNITZER CO.
1020 Corporation Way
Palo Alto, California
Phone 968-8304

T. LOUIS SNITZER CO.
7814 Ivanhoe Avenue
La Jolla, California
Phone GLencourt 4-2191

T. LOUIS SNITZER CO.
15th N. 40th Place
Phoenix, Arizona
Phone 273-1673

*Main Office

DATA TECHNOLOGY CORPORATION
P. O. Box 10935
Palo Alto, California

Data Technology Corporation

INTE-PATCH

DT-2605

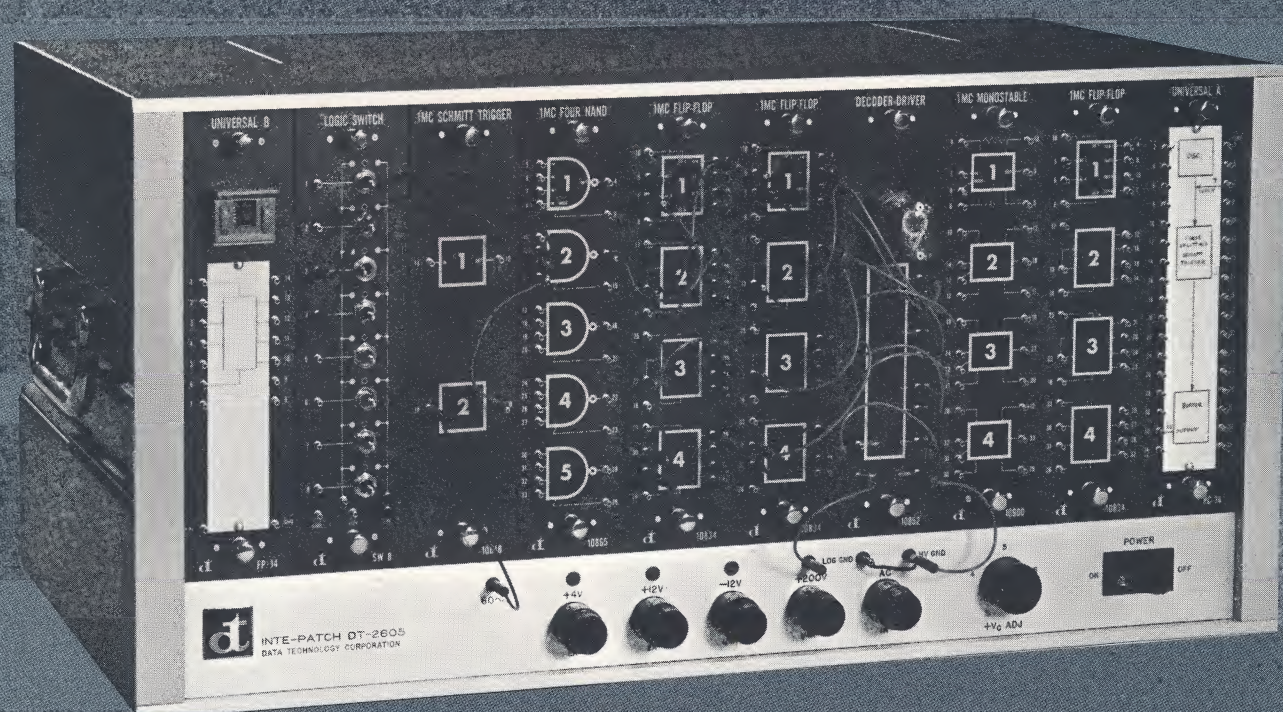- integrated circuit tester ■
- logic card tester ■
- function generator ■
- system designer ■
- simulator ■
- trainer ■
- systems checkout ■

INTE-PATCH DT-2605
DATA TECHNOLOGY CORPORATION

Integrated Circuits and Your Job

The design engineers and managers responsible for the development of every new product or system must consider the effect Integrated Circuits will have on their work.

This does not mean that you should immediately switch to Integrated Circuits, for unfortunately just as many projects have failed by jumping to state-of-the-art techniques too soon as have failed by utilizing obsolete techniques. It therefore behooves the responsible engineer to thoroughly evaluate new devices in order to determine and fully understand their contributions and their limitations so that they may be applied with the least risk and at the optimum time.

Complexity of Integrated Circuits

Unlike the simple comparison between transistors and vacuum tubes and the simple tests and evaluation work needed to thoroughly understand transistors, Integrated Circuits are complex. They are not just an element but a complete function and sometimes several inter-related functions.

The Inte-Patch unit enables you to evaluate Integrated Circuits in respect to your program. At the same time, it provides, in one easy reusable box, a check on the impending interface problems and a comparison with discrete component logic.

Integrated Circuit Limitations

You cannot build complete systems out of Integrated Circuits. Those of you who have had the opportunity to evaluate Integrated Circuits have found that they are not a panacea for all electronic problems. They cannot, nor will not in the near future, replace all discrete components. The interface with electro-mechanical devices, high voltages and large currents are beyond the capabilities of Integrated Circuits. Thus where Integrated Circuits are to be used, a hybrid system will result.

Your Responsibility

It is your responsibility as an engineer to evaluate the total effect Integrated Circuits will have on your program and organization. The Inte-Patch unit provides you with this tool, for you can:

1. Test and evaluate the total performance characteristics of Integrated Circuits.
2. Design complete systems including the interface with electro-mechanical devices.
3. Generate functions or pulse trains for laboratory or checkout applications.
4. Simulate airborne systems where Integrated Circuits are being considered.
5. Test a complete line of discrete component logic cards.
6. Train engineers in the new techniques of logic design.

INTE-PATCH
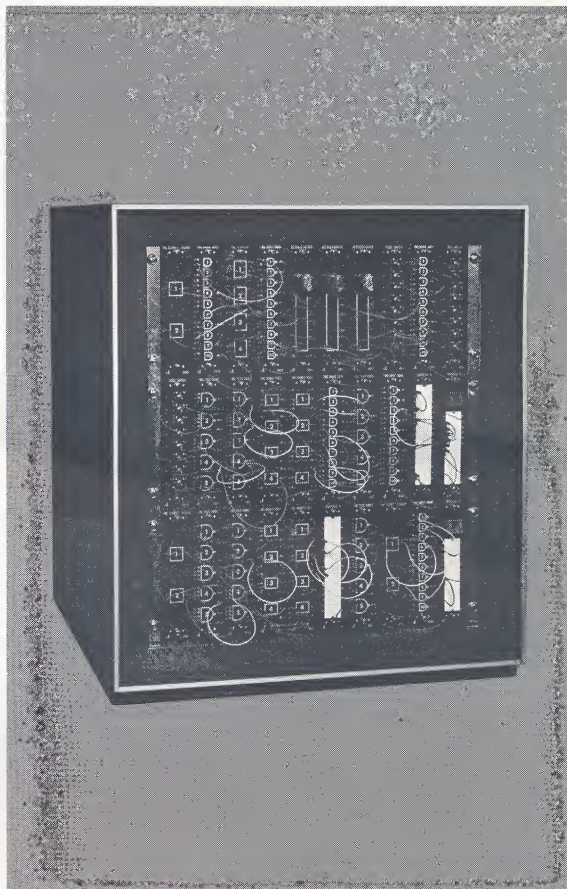
## SYSTEM DESIGN

Simple Functions

It is imperative that simple or shortlived tasks be accomplished quickly and economically, and upon completion of their usefulness that the equipment be reusable. Such is the case when using the Inte-Patch unit. The face plates present the logical functions in neat, easy to read, standard militarized symbols with all inputs on the left and outputs on the right. With great ease you can convert your paper design into the functions desired. When your task is complete, unplug the patch cords and you are ready to start again without any loss.

Complex Systems

Large sophisticated systems constantly over-run their budgets due to problems arising during the design, assembly and checkout phases. The Inte-Patch unit greatly simplifies these tasks. In the design phase, logical functions can be readily checked for performance under worst case conditions, specification adherence, inter-system relations and for interface with other systems. Timing races, false triggering and other problems can be spotted and corrected prior to costly rework. Once the design has been proven, it becomes a simple task for any technician to repackage the functions set up on the Inte-Patch unit. All patch pin numbers directly correspond to the pin connector numbers on the logic card. A 20:1 increase in packing density can be readily accomplished by using the standard Data Technology drawer mounting technique. Both IC logic functions and discrete component interface cards can be mounted in the same drawer. The Inte-Patch unit simplifies the checkout phase by generating functions, pulse trains, or simulating sections of the total systems.

Reliability and Performance

Data Technology's Logic Modules are the culmination of extensive experience in the systems business. These modules have been used successfully in fields covering the gamut from Food Process Control to Rocket Engine Testing. Those cards employing discrete components exclusively use silicon planar epitaxial passivated transistors and diodes, high quality components, and carry a five year warranty. The integrated circuits used are premium quality silicon planar epitaxial devices. Complete line of 1 mc, 5 mc, and 10 mc cards are available. A typical noise rejection is better than 1 volt.
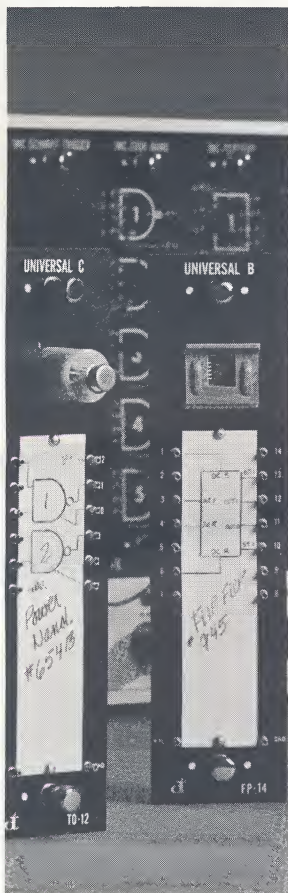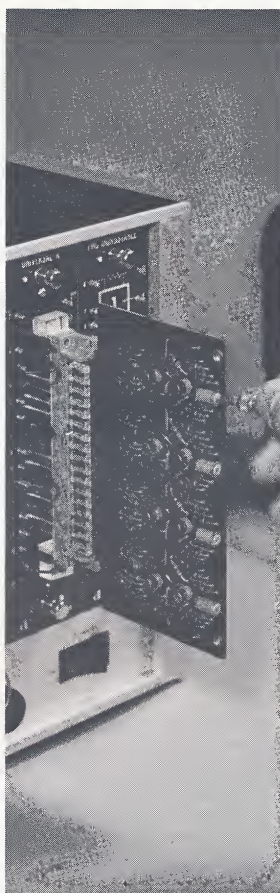
I. C. TESTING

True Evaluation

Integrated Circuits are complicated functions whose performance characteristics must be tested under similar conditions to which they will be used if true evaluation and analysis is to be achieved. Testing, evaluating and complete analysis of IC's is one of the tasks to which the Inte-Patch unit is well adapted. Special controls have been incorporated to enable you to evaluate your IC under anticipated worst case conditions.

Simplicity and Flexibility

The IC to be tested can be mounted quickly and securely to either the Flatpack Face plate #12514 for all devices to 14 leads or the TO-5 can Face plate #12512 for all devices to 12 leads. The operator can then vary the supply voltages, load, trigger rate, trigger level, noise and other parameters in order to determine—fan in, fan out, switching or delay time, rise and fall time of output pulses, etc.

Application Assistance

Application Bulletin B-2605-2 gives step by step instruction for evaluating IC's.

LOGIC CARD TESTING

Certification of a logic card's performance characteristics, whether for incoming inspection, trouble shooting, or for establishing functional design criteria, can be costly in terms of both time and money. The Inte-Patch unit simplifies the test setup and procedures while automating many of the checks. This unit is essential when large quantities of logic cards are to be tested. A partial listing of the functions that can be evaluated are: fan out, fan in, noise rejection, turn-on and turn-off delay, propagation delay, stability, operating frequency, jitter, adjustment capability, and power consumption.

Complete application notes are available for testing Data Technology's logic cards.

CHECKOUT AND FUNCTION GENERATOR

Dynamic testing can at times become quite complicated, however, is essential for system verification. To assist in this task the Inte-Patch unit enables you to generate unique functions, pulse trains or other pulses used to check out or certify your systems design. Pulse width, pulse repetition rates, and pulse code techniques may be readily patched into the unit under test. Pulses may be delayed precisely, multiple generated, randomly generated, or externally triggered. Noisy pulses can be cleaned and reshaped, trigger levels selected and synchronization established all within the Inte-Patch unit.
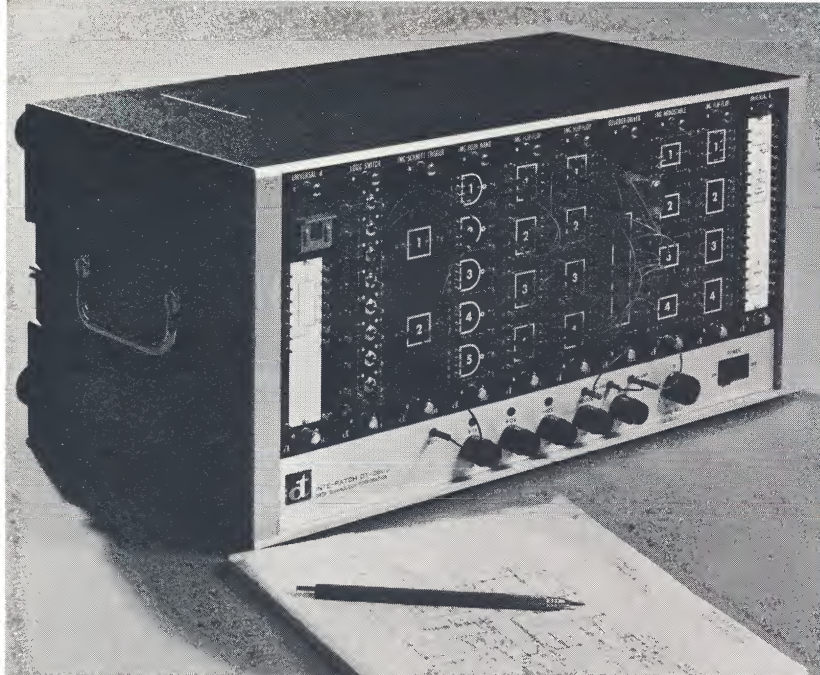
SIMULATION

The high cost of space and airborne packaged electronics makes it mandatory that performance characteristics be predictable. This can only be accomplished through simulation of worst case design conditions. The actual functional design and inter-relationships can quickly and economically be simulated on the Inte-Patch unit. Kluge boards can be utilized to approach the packaging density, voltages can be varied, and loads changed to simulate expected conditions.
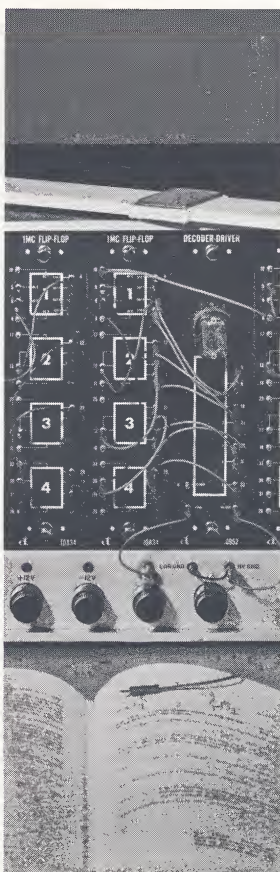
TRAINING

The ultimate success of your group or project is directly related to the total capability—the combined experiences, training and ingenuity of every man. The Inte-Patch unit, coupled with selected texts can increase your engineers' knowledge of modern logic design. Several of the texts are written in the programmed learning method of instruction. This technique, now used in teaching machines, has been shown to establish a firmer foundation of understanding and a greater retention capability than the older methods.

Further simplicity and understanding is achieved by the correlation of all printed matter with the electronic logical symbols on the faceplates of the Inte-Patch. The latest standard Militarized Logic Symbols have been used. The inputs are always on the left and outputs on the right and are symmetrically arranged to prevent any ambiguities. Integrated circuits may be inter-mixed with discrete component logic to familiarize the engineer with the advantages and limitations of each. Most of the texts contain extensive bibliographies.

INTE-PATCH
DT-2605

PRICES

ITEM	MODEL	PART #	PRICE
Basic Inte-Patch Assembly			
Including power supply, control section. Ten faceplates associated with Starter Logic Group and 150 assorted patch cords.			
Cabinet mounted	DT-2605	12368	$925.00
Rack mounted	DT-2605	12320	838.00
Starter Logic Group		12550	975.00
Consisting of the following logic functions			
12 — flip flops			
10 — 2-Input NAND gates			
5 — 4 Input NAND gates			
2 — Schmitt triggers			
1 — Display Drive with readout			
4 — Monostable multivibrators			
10 — Diode gates			
1 — XTAL oscillator			
Integrated Circuit Testing Group*			
Flat pack tester	FP-14	12514	26.60
TO-5 can tester	TO-12	12512	26.60
Application notes I.C. testing		B-2605-2	N/C
Function Generator and Simulator Group*			
Universal Faceplate		12506	26.60
1 logic Switch Faceplate	SW-8	12533	51.50
Card Tester Group*			
1 Card Tester Faceplate	Universal	12589	26.60
1 Logic Switch Faceplate	SW-8	12533	51.50

ITEM	PART #	PRICE
Systems Design Group*		
(See Logic Card Catalog for specifications and prices)		
Logic Card Faceplates		
Flip Flop — 1 mc	12370	$ 26.60
4 NAND — 1 mc	12372	26.60
MONO — 1 mc	12374	26.60
2 Diode Gate	12376	26.60
ST-02	12380	26.60
2 NAND — 1 mc	12388	26.60
Display Driver	12397	26.60
TO-5 Can Tester	12512	26.60
Flat Pack Tester	12514	26.60
Logic Switches SW-8	12533	51.50
Accessories		
Universal Faceplate	12506	26.60
150 assorted jumpers	12510	150.00
Kluge Card	10796	33.00
Blank Card	11317	15.00
Extension Frame	12545	79.90
Training Group*		
Texts: Introduction to Logic Design	B-2605-3	3.00
Boolean Algebra	B-2605-4	7.00
Logic Simplified	B-2605-5	1.00
Binary Arithmetic	B-2605-6	7.00
Complete set of above texts		10.00

Prices are subject to change without notice.

*A Basic Inte-Patch Assembly and the starter Logic Group is required.

SIZE AND WEIGHT

Inte-Patch unit is 19″ x 10″ x 9″. Weighs approx. 26 lbs. including 10 faceplates. All faceplates are 7 x 1¾ and have an average weight of 4 oz. Logic Cards are 3¾ x 5½ and have an average weight of 4 oz.

LEASE

The Inte-Patch unit and its associated hardware is available on a monthly or yearly lease plan. If interested, write for brochure B-2605-7.

Data Technology Corporation

P. O. BOX 10935, PALO ALTO, CALIFORNIA

Telephone: (415) 321-0551

TWX (415) 969-9197

MECHANICAL ACCESSORIES

Data Technology offers for sale the hardware and tools required to assemble an electronic system from its series of logic cards.
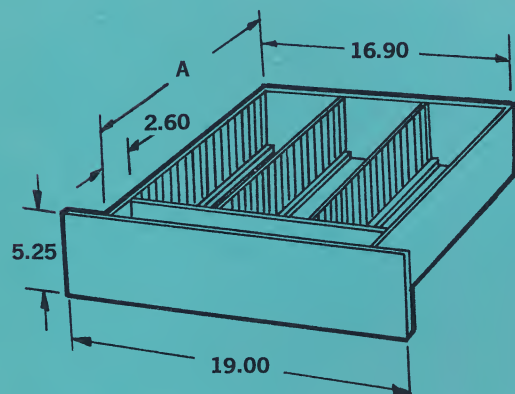
Many of the items listed herein can be purchased from the original manufacturer or they may be ordered from Data Technology.

Packaging is done in one of two configurations: top access (below) or front access.
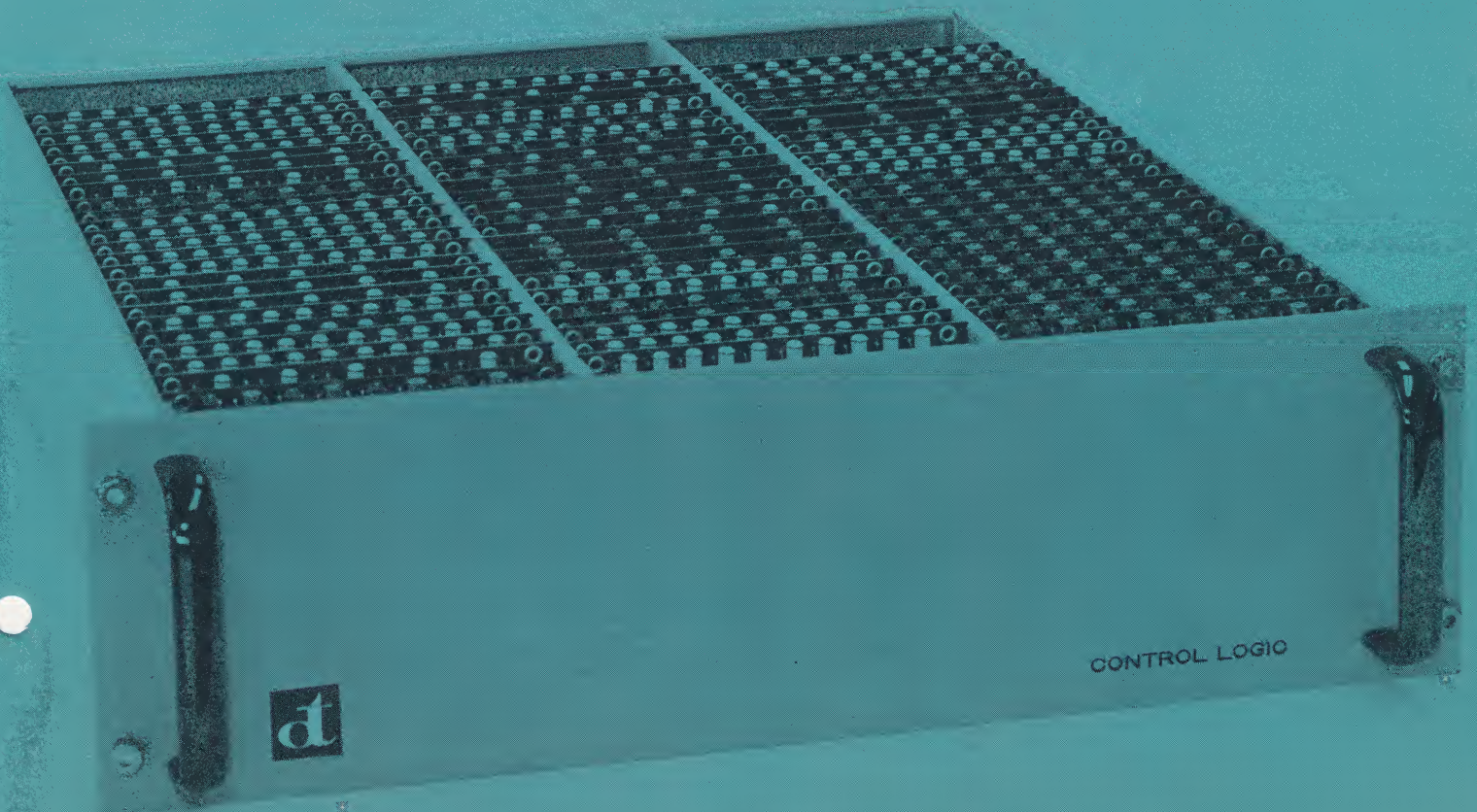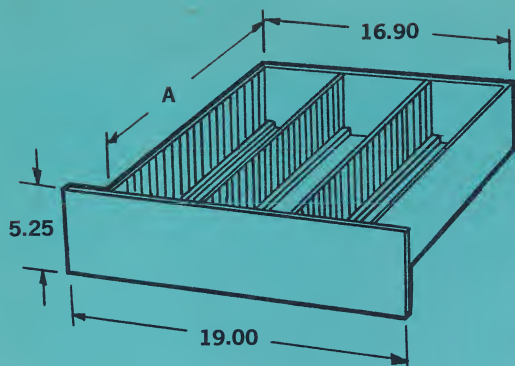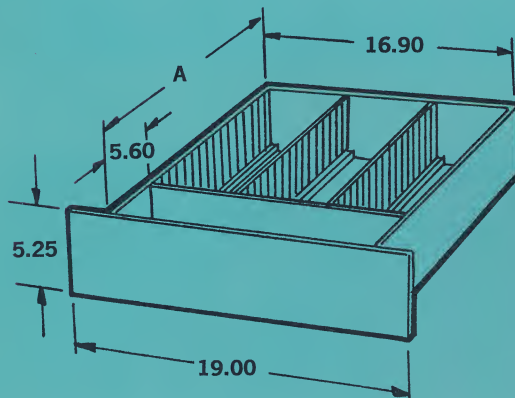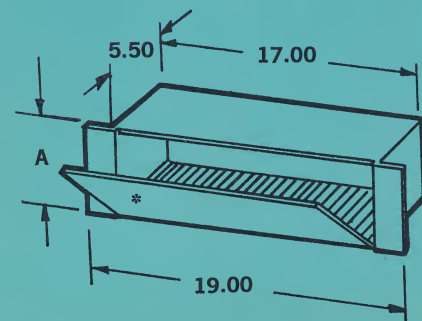
CATALOG NUMBER	CARD CAPACITY	A
DF — 78A	78	20.00
DF — 66A	66	17.20
DF — 54A	54	14.40
DF — 42A	42	11.60

CATALOG NUMBER	CARD CAPACITY	A
DF — 66B	66	20.00
DF — 54B	54	17.20
DF — 42B	42	14.40
DF — 30B	30	11.60

CATALOG NUMBER	CARD CAPACITY	A
DF — 54C	54	20.00
DF — 42C	42	17.20
DF — 30C	30	14.40
DF — 18C	18	11.60

CATALOG NUMBER	CARD CAPACITY	A
DF — 69M	69	17.50
DF — 46M	46	12.25
DF — 23M	23	7.00

* DOOR SHOWN OPTIONAL

REAR PANEL CONNECTIONS

ITEM				TO ORDER SPECIFY:
a.	75 pin Burndy connector (male) (cable termination)			Burndy MS75P
b.	75 pin Burndy connector (female) (rear panel mounted)			Burndy MS75R
c.	Burndy connector pins	male	20 gauge	Burndy RM20W-2
	(50 per box) pins	male	18 gauge	Burndy RM18W-10
	sockets	female	20 gauge	Burndy RC20W-2
	sockets	female	18 gauge	Burndy RC18W-10
d.	Burndy extractor tool			Burndy RX20-10
e.	Burndy plastic outer sleeve			Burndy RX20-10-P13
f.	Burndy hand crimper (use N20RT-2 die set)			Burndy/M8ND

NOTE: Connectors and tools compatible with 18 and 20 gauge pins. Use 20 gauge wire and pins for signals. Use 18 gauge wire and pins for ground and power leads.
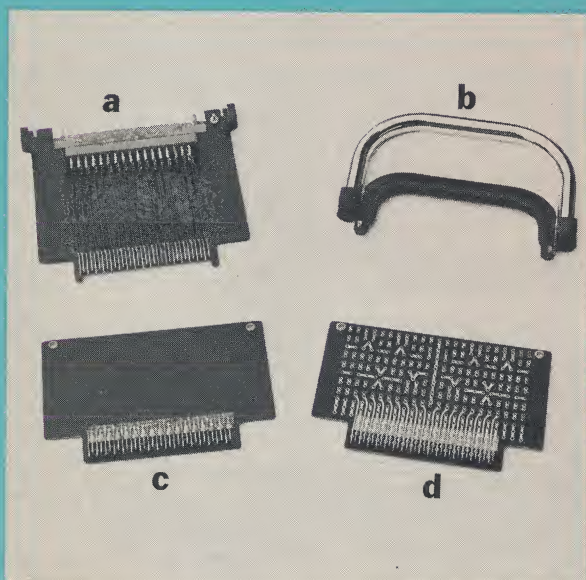

CHASSIS CONNECTIONS

ITEM		TO ORDER SPECIFY:
a.	34 pin ELCO connector	
	Taper pin	ELCO/TP
	Solder tab	ELCO/ST
	Wire wrap	ELCO/WW
b.	Polarizing key	
	ELCO 5006.3414	ELCO/KEY
c.	Assorted jumper leads (50 per box)	JUMP/50
d.	Taper pins (100 per box)	AMP/PINS
e.	Insertion tool AMP-380306-2	AMP/IT
f.	Hand crimper AMP-48698	AMP/HC

ITEM		TO ORDER SPECIFY:
a.	Card extender	XTEND
b.	Card extractor	XTRAC
c.	Blank card	BLANK
d.	Kluge board	KLUGE
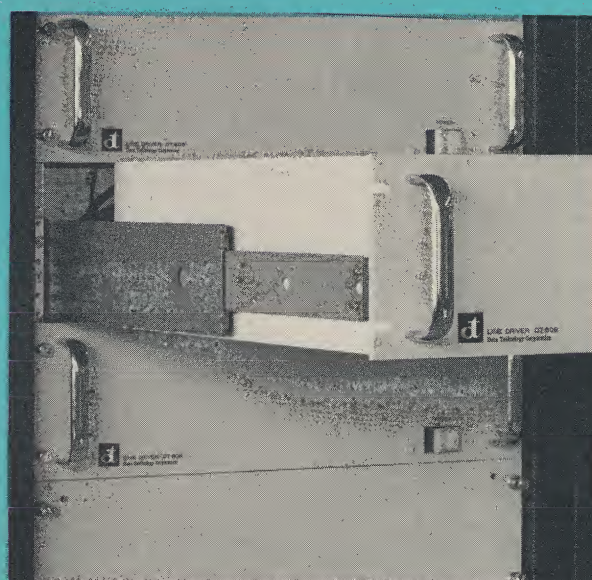
ITEM	TO ORDER SPECIFY:
Chassis Track	CTN-120

Shown above is a typical Data Technology system. This system gathers radio astronomy data and logs it on punched cards.

Data Technology will be glad to assist you in logic design of your system; we are also prepared to supply quotations for designing and assembling your system at the factory.

DATA TECHNOLOGY CORPORATION
P. O. Box 10935
Palo Alto, California

We sincerely appreciate your interest in our products. The response to our recent news releases and advertisements was totally overwhelming. We had planned to respond by including: (a) our 200 page catalog on the discrete component Logic Cards; (b) our 32 page catalog on our Integrated Circuit Logic Cards; and (c) a 4 page flyer describing our Inte-Patch unit.

The cost of these brochures amounts to several dollars and, therefore, we have taken the more economical approach of including brief summaries of the above plus a return post card. After scanning the material, should you desire the complete set of literature, just fill in and return the post-card to us. In the interum, should you wish immediate answers to any of your questions, please contact us.

Again, thank you for your interest in our products.

Very truly yours,

Peter Dietz
Vice President -
Marketing